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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.  | CONFIRMATION NO. |
|--|-------------|----------------------|----------------------|------------------|
| 10/660,887   | 09/12/2003  | Mohamad El-Batal     | LSI.78US01 (03-1076) | 6956             |
| 24319  | 7590        | 09/27/2004           | EXAMINER             |                  |
| LSI LOGIC CORPORATION<br>1621 BARBER LANE<br>MS: D-106 LEGAL<br>MILPITAS, CA 95035 |             |                      | VU, PHUONG T         |                  |
|  |             |                      | ART UNIT             | PAPER NUMBER     |
|  |             |                      | 2841                 |                  |

DATE MAILED: 09/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |  |  |
|------------------------------|--------------------------------------|--|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/660,887 | <b>Applicant(s)</b><br>EL-BATAL ET AL. |  |
|                              | <b>Examiner</b><br>Phuong T. Vu      | <b>Art Unit</b><br>2841                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 24 June 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 11-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4,6-8 and 11-18 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, 6-8, 11-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carteau et al. (US 5,506,750). Regarding claim 1, the reference discloses a storage system SP with multiple disk drives comprising an enclosure, an interface board FP having a first backplane interface connector CX<sub>1</sub> and a second backplane interface connector CX<sub>2</sub>, said interface board being mounted in said enclosure, said interface board being substantially planar and defining an interface board plane (which extends vertically), a first CDA<sub>1</sub> and second CDA<sub>2</sub> backplane each having a plurality of disk drive interface connectors C<sub>101</sub>-C<sub>110</sub> and a backplane interface mating connector (CAR<sub>1</sub>, CAR<sub>2</sub> respectively) capable of mating with one of said first and second backplane interface connectors, said plurality of disk drive interface connectors being arranged in a plurality of rows and a plurality of columns, said first and second backplane being substantially planar and defining a first and second backplane plane (each of which extends horizontally), a first set of disk drives 101-110 electrically connected to said first backplane through said plurality of disk drive interface connectors, each of said first set of disk drives having a longest edge defining a

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long axis, said long axis being oriented parallel to said first backplane plane, a second set of disk drives (another set 101-110) electrically connected to said second backplane through said plurality of disk drive interface connectors, each of said second set of disk drives having a longest edge defining a long axis, said long axis being oriented parallel to said second backplane plane, a first power supply  $AL_1$  connected to said first backplane, a second power supply  $AL_2$  connected to said second backplane, a first guiding mechanism  $G_1$  mounted in said enclosure, said first guiding mechanism defining a first axis of insertion, said first axis of insertion being substantially perpendicular to said interface board plane, said first guiding mechanism being arranged to guide said first backplane into said enclosure such that said first backplane electrically connects to said first backplane interface connector such that said first backplane plane is substantially perpendicular to said interface plane, said first backplane and said first set of disk drives being removable from said enclosure as a first single unit and a second guiding mechanism  $G_2$  mounted in said enclosure, said second guiding mechanism defining a second axis of insertion, said second axis of insertion being substantially perpendicular to said interface board plane, said second guiding mechanism being arranged to guide said second backplane into said enclosure such that said second backplane electrically connects to said second backplane interface connector such that said second backplane plane is substantially perpendicular to said interface plane, said second backplane and said second set of disk drives being removable from said enclosure as a second single unit. The reference does not teach that the first and second set of disk

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drives wherein each of the disk drives having a longest edge defining a long axis, said long axis being oriented perpendicular to said first and second backplane plane respectively. Instead the long axis is parallel to the backplane. However, it would have been obvious that the disk drives may be positioned such that the long axis is perpendicular to the backplane to provide better cooling to the storage system.

Regarding claim 2, the system further comprises a first frame  $P_1$  into which is mounted said first backplane and said first set of disk drives and a second frame  $P_2$  into which is mounted said second backplane and said second set of disk drives.

Regarding claim 3, the first backplane is substantially a mirror image of said second backplane.

Regarding claim 4, the first backplane and said second backplane are identical and interchangeable.

Regarding claim 6, the interface board comprises a RAID controller.

Regarding claim 7, the first set of disk drives is a RAID mirror of said second set of disk drives.

Regarding claim 8, one of said first backplane and second backplane may be removed from said enclosure while said storage system is operable.

Regarding method claims 11-18, one would necessarily perform the recited method steps in constructing the storage system rejected above.

***Allowable Subject Matter***

3. Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

4. Applicant's arguments filed 24 June 2004 have been fully considered. In light of Applicant's claim amendments, the previous 35 U.S.C. 112 rejection has been withdrawn. Applicant's amendments to the specification have been entered into the application file.

Regarding the previous 35 U.S.C. rejection, Applicant correctly pointed out that the word "anticipated" was used in the rejection rather than the word "obvious" which should have been used. This was a cut-and-paste error on the part of the examiner. The examiner regrets any confusion this may have created. Applicant was correct in assuming that "anticipated" should be read as meaning "obvious". Further regarding the 103 rejection, Applicant states that amended claims 1 and 11 recite a first power supply that is connected to the first backplane and a second power supply that is connected to the second backplane, contrary to the teachings of Carteau that show two identical power supplies wherein one power supply is connected to all of the plates bearing disk memories and that this power supply is backed up by a second power supply or battery in the event that the first power supply fails and therefore requires electronics to sense a power failure and also requires a switch connected to the backup power. While this may be true, the claims presently recite "a first power

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supply connected to said first backplane” and “a second power supply connected to said second backplane” which is still met by the configuration shown in Carteau. The first power supply is electrically connected to said first backplane and also said second backplane and the second (backup) power supply is electrically connected to the first backplane and also the second backplane through the switching means. Therefore, the claim limitations have been met by the reference.

### ***Conclusion***

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong T. Vu whose telephone number is (571) 272-2111. The examiner can normally be reached on Mon. & Tues., 7:30 AM - 4:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David S. Martin can be reached on (571) 272-2107. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PTVu  
Patent Examiner  
Group 2841  
9-20-04

